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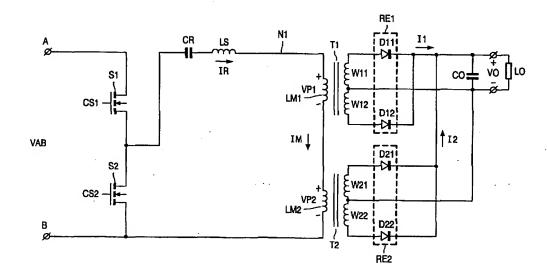
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(54) Title: LLC HALF-BRIDGE CONVERTER



(57) Abstract: A resonant LLC-power converter comprises at least two transformers (T1, T2) of which the primary windings (LM1, LM2) are connected in series. Each one of the transformers (T1, T2) has a secondary winding (W1, W2; W11, W12, W21, W22) which supplies a non-zero current to the same load (LO) during the same period of time (TC).

INTERNATIONAL SEARCH REPORT

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A. CLASSII IPC 7	FICATION OF SUBJECT MATTER H02M3/335							
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According to International Patent Classification (IPC) or to both national classification and IPC								
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Minimum documentation searched (classification system followed by classification symbols) IPC 7 H02M								
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched								
Electronic data base consulted during the International search (name of data base and, where practical, search terms used)								
EPO-Internal, WPI Data, PAJ								
C. DOCUMENTS CONSIDERED TO BE RELEVANT								
Category °	Citation of document, with indication, where appropriate, of the rele	evant passages	Relevant to claim No.					
X	US 5 694 304 A (PELLERIN SHARON 2 December 1997 (1997-12-02) column 11, line 57 -column 12, li figure 4	ET AL) ne 37;	1,5,6					
А		T AL)	1-6					
Furt	her documents are listed in the continuation of box C.	X Patent family members are listed	in annex.					
° Special co	topories of sited documents :							
"A" docume consic "E" earlier of filing of "L" docume which citation "O" docume other of "P" docume "P" "P" docume "P" do	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as 'specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but	"T" later document published after the Inte or priority date and not in conflict with cited to understand the principle or the invention "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the do "Y" document of particular relevance; the cannot be considered to involve an inventive step when the document is combined with one or moments, such combined with one or moments, such combination being obviou in the art. "&" document member of the same patent	the application but sory underlying the standard invention be considered to cument is taken alone latimed invention ventive step when the ore other such docuus to a person skilled					
Date of the	actual completion of the international search	Date of mailing of the International sea	arch report					
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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5694304	Α	02-12-1997	US	5712772 A	27-01-1998
US 6344979	B1	05-02-2002	CN TW	1368787 A 533669 B	11-09-2002 21-05-2003